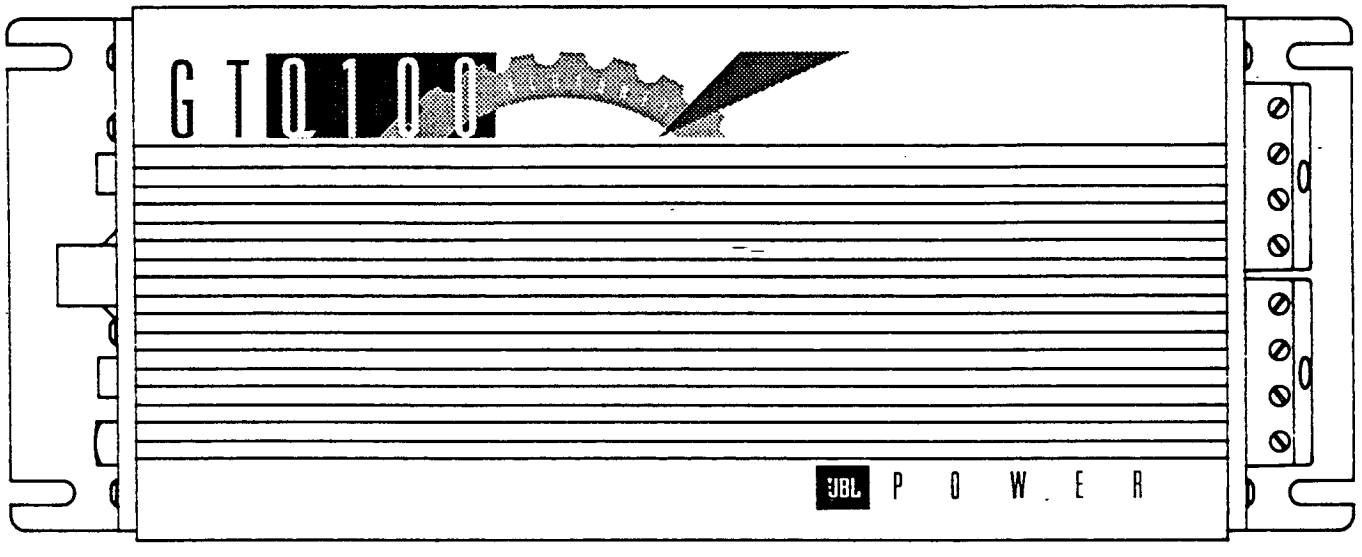
GTQ100
2 CHANNEL
AUTOMOTIVE
POWER AMPLIFIER
TECHNICAL MANUAL



JBL Consumer Products Inc.
240 Crossways Park West
Woodbury, NY 11797
800-645-7484

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JBL GTQ100 POWER AMPLIFIER FEATURES

Minimal Negative Feedback

All amplifiers require some form of negative feedback to minimize distortion and stabilize the amplifier. Too much feedback, however, increases the Transient Intermodulation Distortion (T.I.M.), and reduces its musicality. JBL's Minimal Negative Feedback design provides just enough feedback to stabilize the amplifier., remove DC offset, and offer excellent Total Harmonic Distortion (T.H.D.) characteristics.

Built-in Biamp Crossover

A built-in switchable electronic crossover network at 80 Hz, 12 dB per octave, configures one pair of the amplifiers channels into a low-pass subwoofer driver, while setting up the other pair to power a pair of high pass tweeter/midrange satellites. The network can be switched off to allow full range signal amplification.

Speaker Level Input Capability

These inputs can be connected to high or standard power head units that do not have a pre-amp output. The head unit's internal fader and balance controls will continue to function properly as this speaker input circuitry emulates a speaker instead of an open load.

Quiet Start Circuitry

Special turn on and turn off circuitry have been implemented to prevent amplifier turn on and turn off pops.

Second Order (12dB per octave) Capacitive/Inductive Power Supply Input Filtering

This specially designed battery voltage input section provides excellent immunity to system noises such as alternator whine.

Full Protection Circuitry

All JBL amplifiers are protected against over-temperature, over-current, over-voltage, input overload, and DC offset. These special circuitries protect the amplifier from installation errors and unfriendly environmental conditions. However, none of these protection systems is in the signal path. They cannot interfere with the sonic performance of the amplifier.

JBL GTQ100 POWER AMPLIFIER SPECIFICATIONS

1. Minimum Power Output into 4 ohms, 4-channel mode, 1 kHz, 1% THD:

18 Watts x 4

2. Minimum Power Output into 2 ohms, 4-channel mode, 1 kHz, 10% THD:

22 Watts x 4

3. Maximum THD at 1 watt into 4 ohms, 1kHz, 4-channel mode:

1% (400 Hz HPF, 30 kHz LPF)

4. Minimum Signal-to-Noise Ratio into 4 ohms, inputs shorted, Gain Controls at Min., 4-channel mode:

85 dBA

5. Input Sensitivity, Gain Control at maximum:

RCA Inputs: 150 mV ±25%

Speaker Inputs: 2.5 V ±25%

6. Minimum Channel Separation, referenced to 20 watts into 4 ohms, 4-channel mode:

1 kHz: 45 dB

7. Gain Control Range, from MIN to MAX, 1 watt, 4-channel mode:

1 kHz: 20 dB ± 20%

8. Output Level Deviation into 4 ohms, 1 watt, 1 kHz reference, 4-channel mode:

20 Hz: -3 dB or less

1 kHz: 0 dB (reference)

20 kHz: -3 dB or less

9. Crossover Cutoff Frequency, into 4 ohms, 4-channel mode, -3 dB point:

High-pass (reference 1 kHz): 80 Hz ±15%

Low-pass (reference 30 Hz): 80 Hz ±15%

10. Current Consumption, 4 ohms, 4-channel mode, 1 kHz signal, 14.4V battery:

18 Watts x 4: 15 A or less

No Input Signal: 1 A or less

GTQ100 DISASSEMBLY PROCEDURE

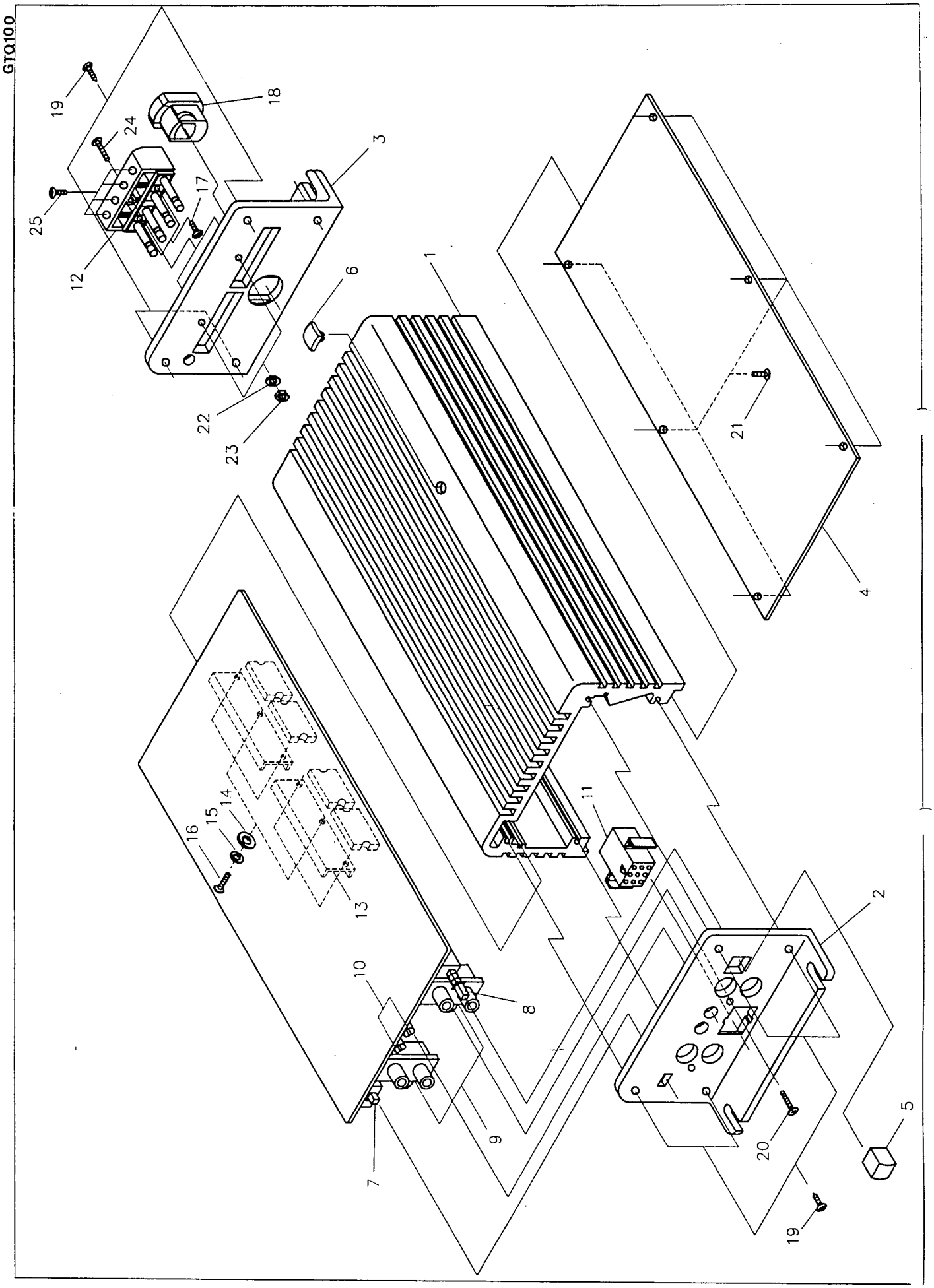
Note: REFER TO EXPLODED VIEW FOR PARTS DESIGNATION.

1. Remove 6 screws (21) securing bottom plate (4).

2. Remove bottom plate to expose main P.C. board assembly.

3. To remove main P.C. board assembly from chassis/heat sink assembly:

    a) Remove 2 phillips screws (20) from the two RCA input jacks.
    b) Release speaker input jacks by compressing mounting tabs.
    c) Remove 4 T-10 torx screws (19) from opposite end of chassis.
    d) Remove 6 screws (16) that secure I.C. heat sink bracket (13) to chassis.
    e) Main P.C. board will now slide out of chassis. Care should be taken to protect the red power L.E.D.. During reassembly, align the red L.E.D. to the correct position before securing panel.


GTQ100
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REV:C MODEL: GTQ100 REVISE DATE: JUNE 17, 1992

PART NO.	REFERENCE NO.	CODE	DESCRIPTION	QTY
			*** P.C.B. SECTION ***	
1-17-162	R17,R20,R39,R42,R60, R63,R81,R84	RES	1/8W +-5% PS 62 OHM	8
1-17-210	R91		1/8W +-5% PS 100 OHM	1
1-17-310	R10,R32,R54,R75,R90,R92		1/8W +-5% PS 1K OHM	6
1-17-322	R87,R88,R95,R96		1/8W +-5% PS 2.2K OHM	4
1-17-330	R3 ,R7 ,R8 ,R18,R21,R25, R29,R30,R40,R43,R47,R51, R52,R61,R64,R68,R72,R73, R82,R85,R93		1/8W +-5% PS 3K OHM	21
1-17-368	R12,R34		1/8W +-5% PS 6.8K OHM	2
1-17-410	R11,R15,R33,R37,R55,R58, R76,R79,R99,R100,R101, R102		1/8W +-55 PS 10K OHM	12
1-17-422	R9 ,R14,R31,R36,R53,R74, R98		1/8W +-5% PS 22K OHM	7
1-17-427	R56,R57,R77,R78,R94,R97		1/8W +-5% PS 27K OHM	6
1-17-433	R4 ,R13,R16,R26,R35,R38, R48,R59,R69,R80		1/8W +-5% PS 33K OHM	10
1-17-468	R5 ,R6 ,R27,R28,R49,R50, R70,R71,R89		1/8W +-5% PS 68K OHM	9
1-17-515	R2 ,R24,R46,R67		1/8W +-5% PS 150K OHM	4
1-18-010	R19,R22,R41,R44,R62,R65, R83,R86		1/4W +-5% PS 1 OHM	8
1-20-210	R1 ,R23,R45,R66		1W +-5% METAL OXIDE 100 OHM	4
1-10-101	C44,C62,C94	M.CAP	100V +-10% 0.1UF	3
1-10-301	C19,C38,C56,C74		100V +-10% 0.001UF	4
1-10-347	C14,C17,C33,C36,C51,C54, C69,C72,C95		100V +-10% 0.047UF	9
1-10-356	C45,C63		100V +-10% 0.056UF	2
1-11-122	C6 ,C7 ,C25,C26		100V +-10% 0.22UF	4
1-12-010	C2 ,C11,C21,C30,C40, C48,C58,C66	E.CAP	50V +-20% 5x11 1UF	8
1-12-110	C1 ,C4 ,C5 ,C8 ,C9 ,C20, C23,C24,C27,C28,C39,C42, C43,C46,C57,C60,C61,C64, C75,C76,C78,C80,C82		16V +-20% 5x11 10UF	23
1-12-147	C12,C31,C49,C67,C85,C86		16V +-20% 5x11 47UF	6
1-12-210B	C13,C16,C32,C35,C50,C53, C68,C71,C84		10V +-20% 6x11 100UF	9
1-12-220	C15,C18,C34,C37,C52,C55, C70,C73,C79,C81,C83		10V +-20% 6x11 220UF	11
1-12-247	C77,C91,C92,C93		16V +-20% 8x14 470UF	4
1-12-522	C87,C88,C89,C90		16V +-20% 13x21 2200UF	4
1-16-110	C10,C29,C47,C65	C.CAP	50V +-10% 100PF B TYPE	4
1-16-147	C3 ,C22,C41,C59		50V +-10% 470PF B TYPE	4
1-09-421	IC1,IC3,IC5,IC7	IC	BA4560	4
1-09-009	IC2,IC4,IC6,IC8		TA8225H	4
1-07-004	TR1,TR2,TR3,TR4,TR6	TRA	9014C	5
1-07-108	TR5		MPS A13	1

REV:C MODEL: GTQ100 REVISE DATE: JUNE 17, 1992

PART NO.	REFERENCE NO.	CODE	DESCRIPTION	QTY
			*** P.C.B SECTION ***	
1-05-001	D1,D2,D3,D5,D6	DIODE	IN4001	5
1-06-001	D4	ZENER	1/2W +-5% 5.1V	1
1-25-150	LD1	LED	MRB31D RED LED	1
1-01-104	T1,T2,T3,T4	COIL	E1-19 10K:10K	4
1-01-301	T5		E1-24 NK01A	1
1-50-033A	PC1	FUSE	GTQ100 F/WIRE SET + 15A F/SET	1
1-50-024	GC1	WIRE	50/0.193x4mm PVC J/W BLACK, 610mm (5+15)	1
1-50-24B	RC1		23/0.193x2.25 PVC J/W BLUE/WHITE, 610mm (5+15)	1
3-58-005B	MAIN PCB	PCB	2032 MAIN P.C.B. REV.E	1

MECHANICAL PARTS LIST

REV:C MODEL: GTQ100 REVISE DATE: JUNE 17, 1992

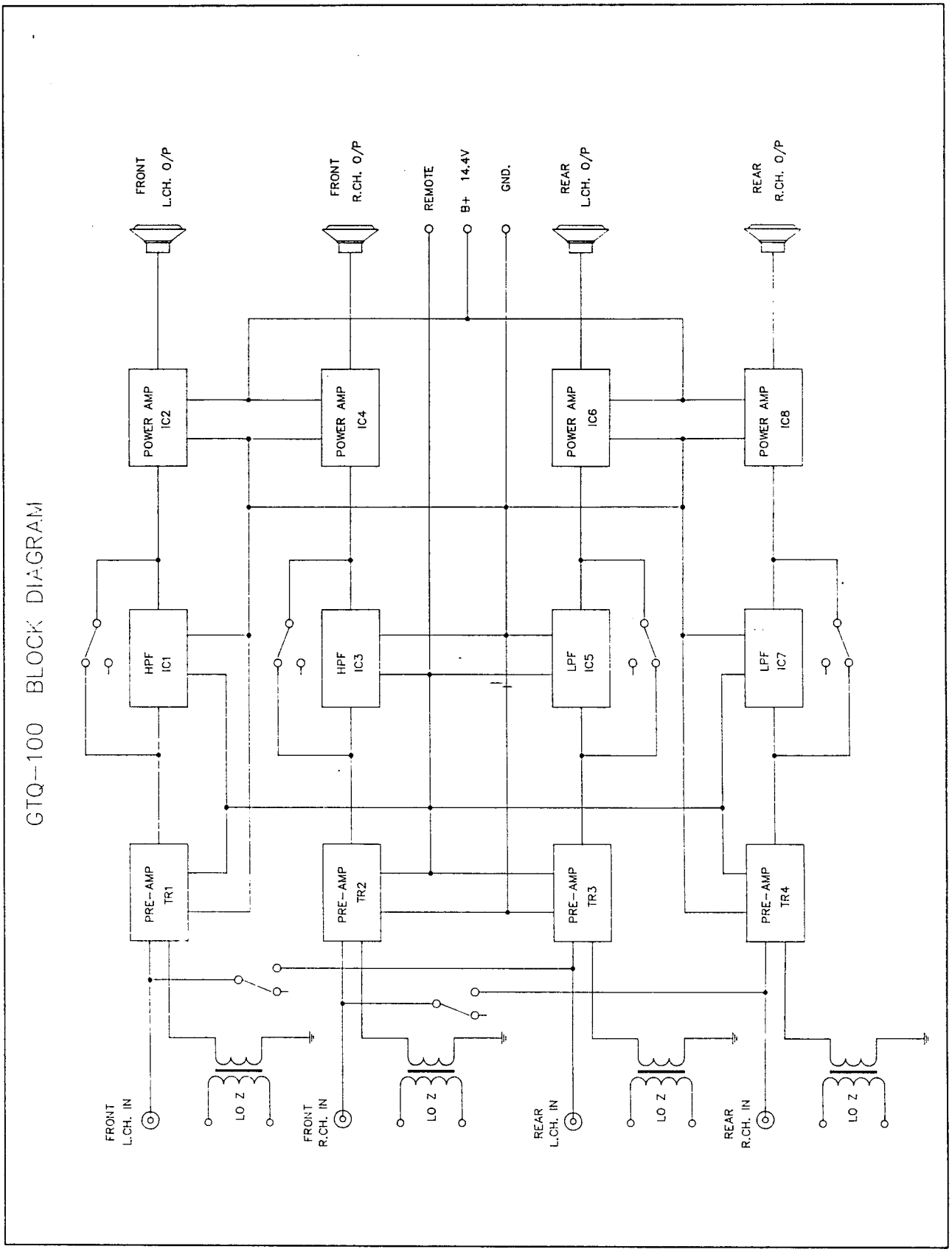
PART NO.	REFERENCE NO.	CODE	DESCRIPTION	QTY
3-58-014	1	PANEL	2032B-4 TOP COVER HEAT SINK	1
3-58-011	2		2032B-1 FRONT PANEL	1
3-58-012	3		2032B-2 REAR PANEL	1
3-58-013	4		2032B-3 BOTTOM COVER	1
3-61-008	5		2018B-8 SWITCH KNOB	1
3-61-009	6		2018B-9 BADGE	1
1-27-017	7	SL.SW	4P2T SK-42D01G6	1
1-27-150	8	P.SW	2P2T EX13EQ13	1
1-43-012	9	JACK	B217A 2RCA JACK (R/W) GOLD P.	2
1-26-001	10	VR	RK09712100047A 20KAx2	2
1-50-197B	11	CON	1625-09R 9POLE FEMALE CON. SET	1
3-60-015A	12		SPEAKER TERMINAL ASSEMBLY	2
3-60-008	13	BKT	2031-8 IC BRACKET	2
1-37-130	14	S&W	M3 FLAT WASHER ZNC	6
1-37-230	15		M3 SPRING WASHER	6
1-35-314	16		3X14 TTB-PH ZNC	6
1-33-206	17		2X6 PT BZ	4
1-44-465	18		SR-6P3 CORD BUSHING	1
1-35-307	19		TORX T10 TTB-PH 3X10 TIN	8
1-35-308	20		3X10 TTB-PH TIN	2
1-35-305	21		MSB 3X6 TIN	6
1-37-230	22		M3 SPRING WASHER ZNC	2
1-37-030	23		M3 NUT	2
1-35-381	24		MSP 3X20 TIN	2
3-24-007	25		M3X7 NI BM	8

PARTS LIST FOR PACKAGE

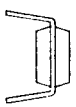
REV:C MODEL: GTQ100 REVISE DATE: JUNE 17, 1992

PART NO.	REFERENCE NO.	CODE	DESCRIPTION	QTY
GTQ100-1	26		GTQ100 SET	
GTQ100-2	27		GIFT BOX	1
2032-PI	28		INNER BOX 2032-P1	1
2032-P2	29,30		INNER PAD 2032-P2	2
1-42-202	30-1		WIRE FASTENER (BLACK)	1
1-29-106	30-2		FUSE LAMP 15A	1
1-36-120	30-3		10x5/8 PA BZ	4
1-37-150	30-4		M5 FLAT WASHER BZ	4
1-37-250	30-5		M5 SPRING WASHER BZ	4
1-50-198B	31		1625-09P1 9POLE MALE SET	1
GTQ100-3	32-1		OWNER'S MANUAL	1
GTC-001	32-2		WARRANTY CARD	1

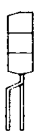
GTQ-100 BLOCK DIAGRAM

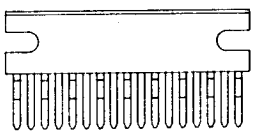


DETAIL OF IC'S



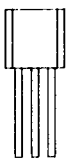
LM833
BA4560
4560D





TA8225H

DETAIL OF TRANSISTORS



2N3904
MPS--A06
MPS--A56
9014C
9015C

GTQ-100

TYPICAL AT IC PINS

MEASUREMENT REQUIRED

MEASUREMENT METER: DIGITAL MULTI METER

POWER SOURCE: DC +14.4V

INPUT: NO SIGNAL INPUT

IC-TA8225H (UNIT: VOLTS)

PIN NO. / IC NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
IC2, IC4, IC6, IC8	5.6V	N.C.	1.9V	0V	0V	0V	1.9V	N.C.	7.3V	14.3V	7.3V	13.6V	0V	0V	13.6V	7.3V	14.3V

IC-4560 (UNIT: VOLTS)

PIN NO. / IC NO.	1	2	3	4	5	6	7
IC1, IC3	6.5V	6.5V	6.49V	0V	6.47V	6.55V	6.55V

IC-4560 (UNIT: VOLTS)

PIN NO. / IC NO.	1	2	3	4	5	6	7
IC5, IC7	6.55V	6.55V	6.54V	0V	6.51V	6.55V	6.55V

TYPICAL AT TRANSISTOR PINS

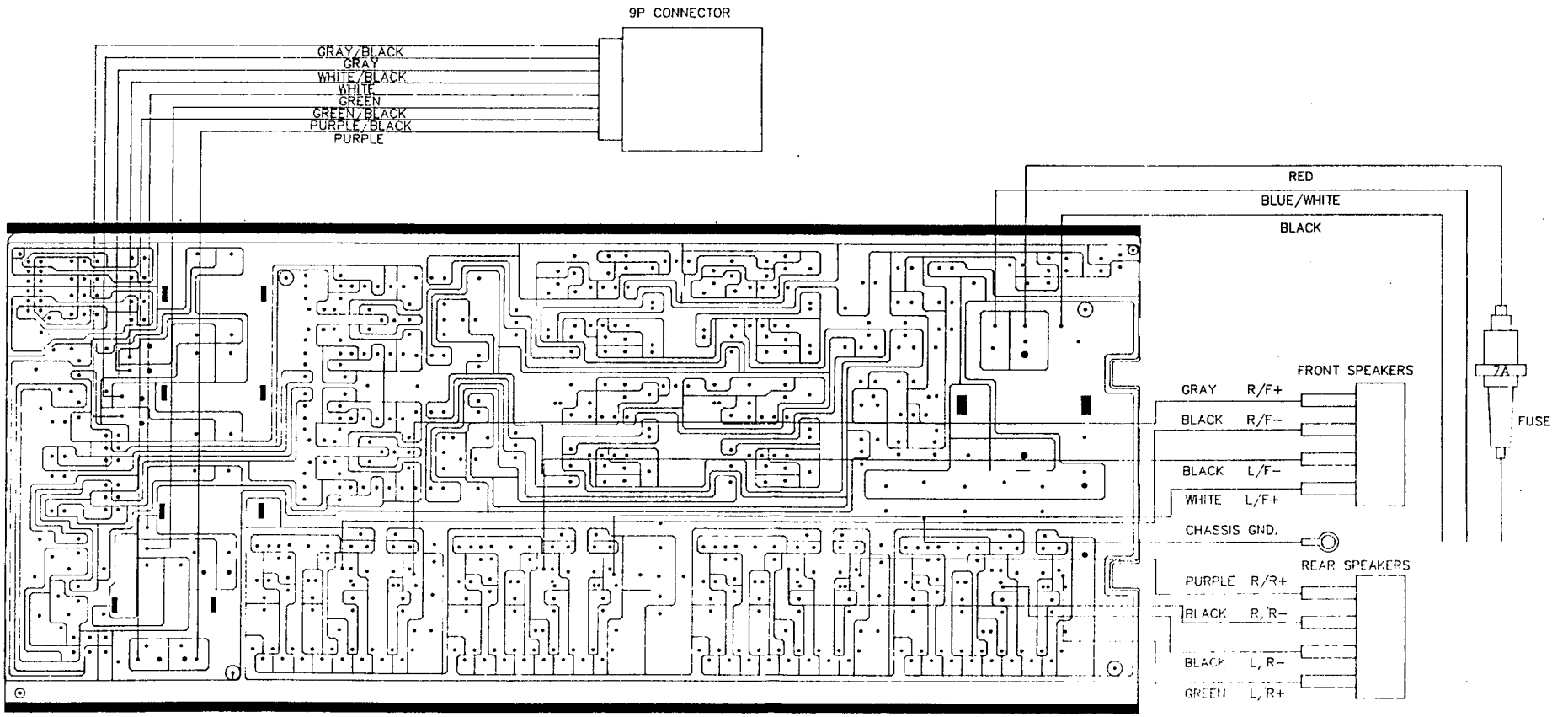
TRANSISTORS (UNIT: VOLTS)

PIN NO. / TRA.NO.	C	B	E
TR1	4.6V	2V	1.46V
TR2	4.6V	2V	1.4V
TR3	4.6V	2V	1.4V

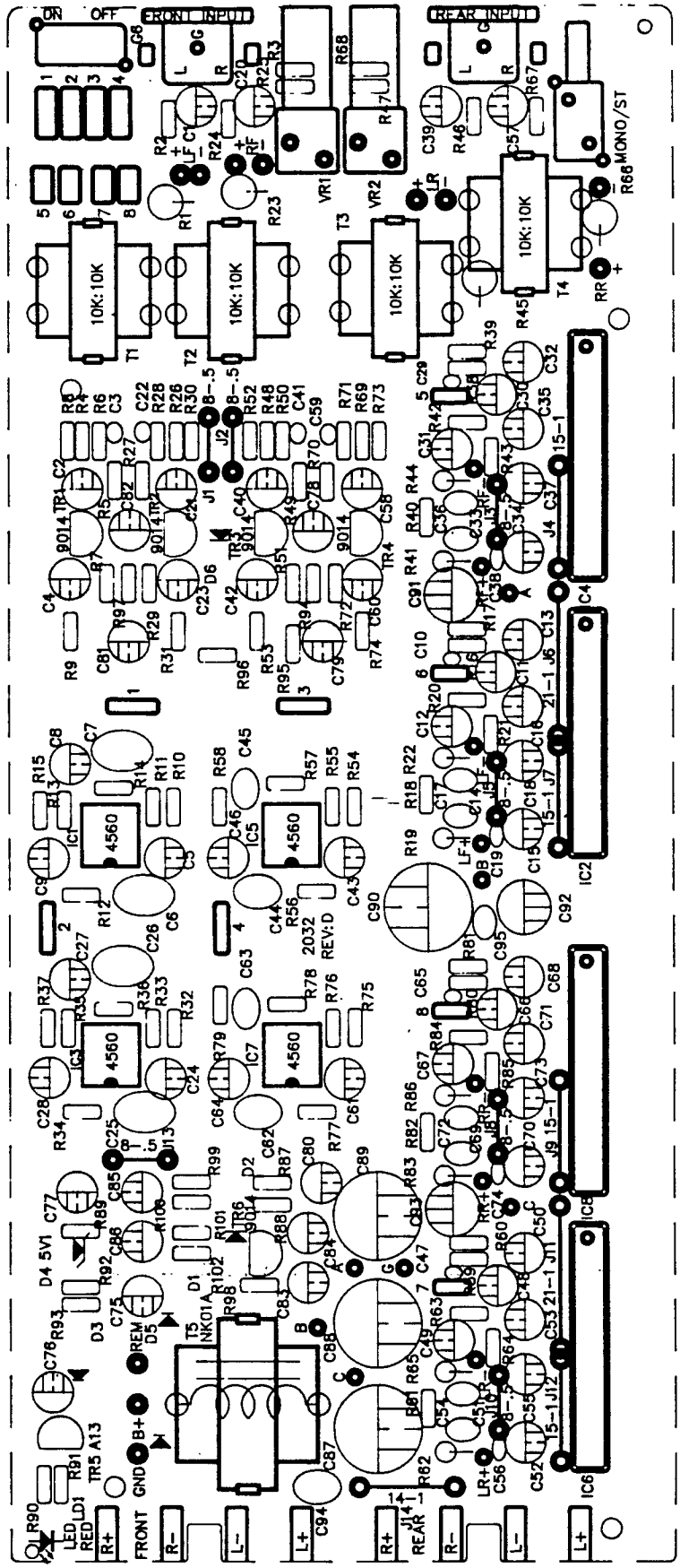
TRANSISTORS (UNIT: VOLTS)

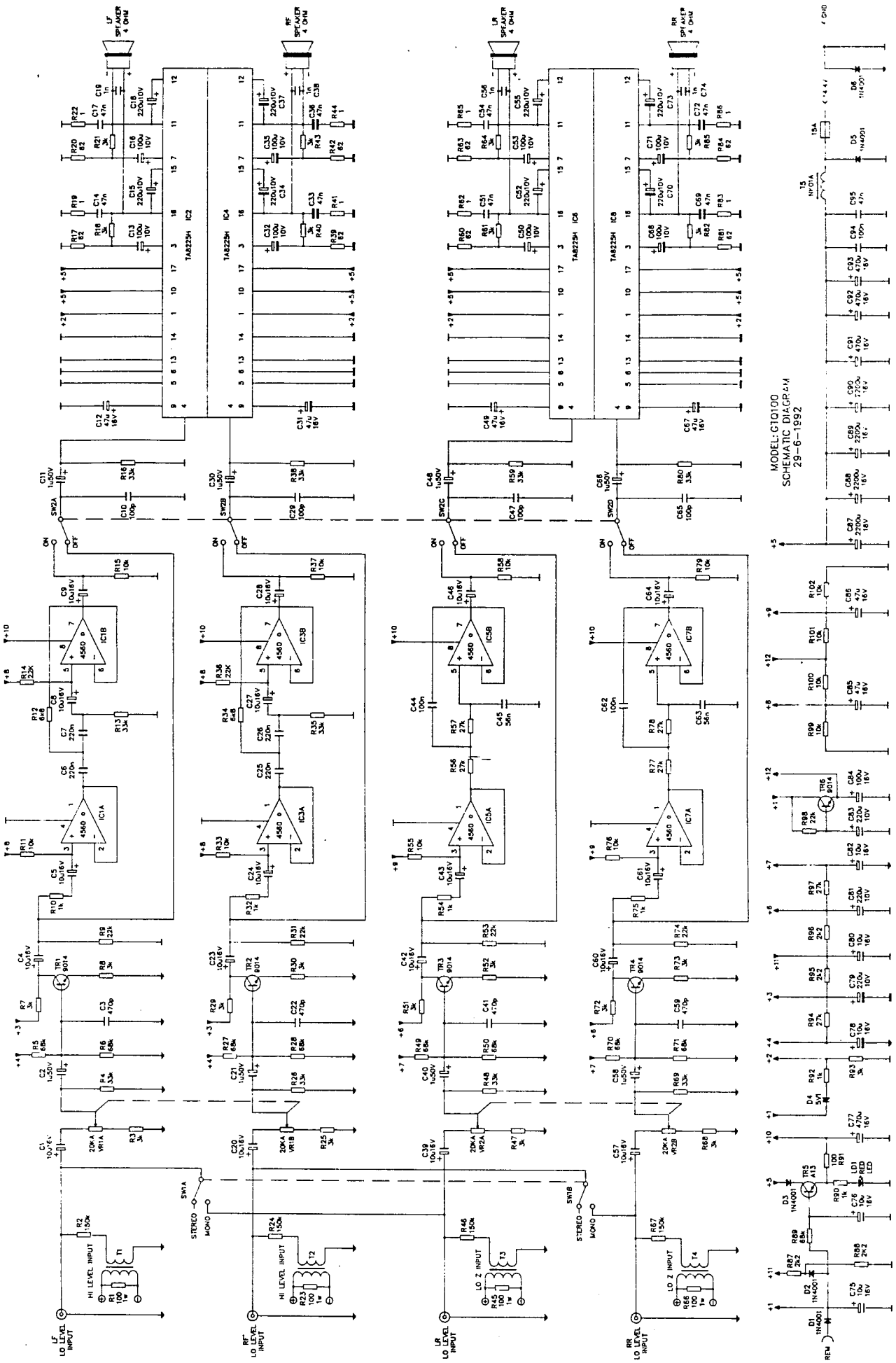
PIN NO. / TRA.NO.	C	B	E
TR4	4.6V	2V	1.4V
TR5	13.6V	13.5V	12.3V
TR6	13.7V	13.5V	12.9V

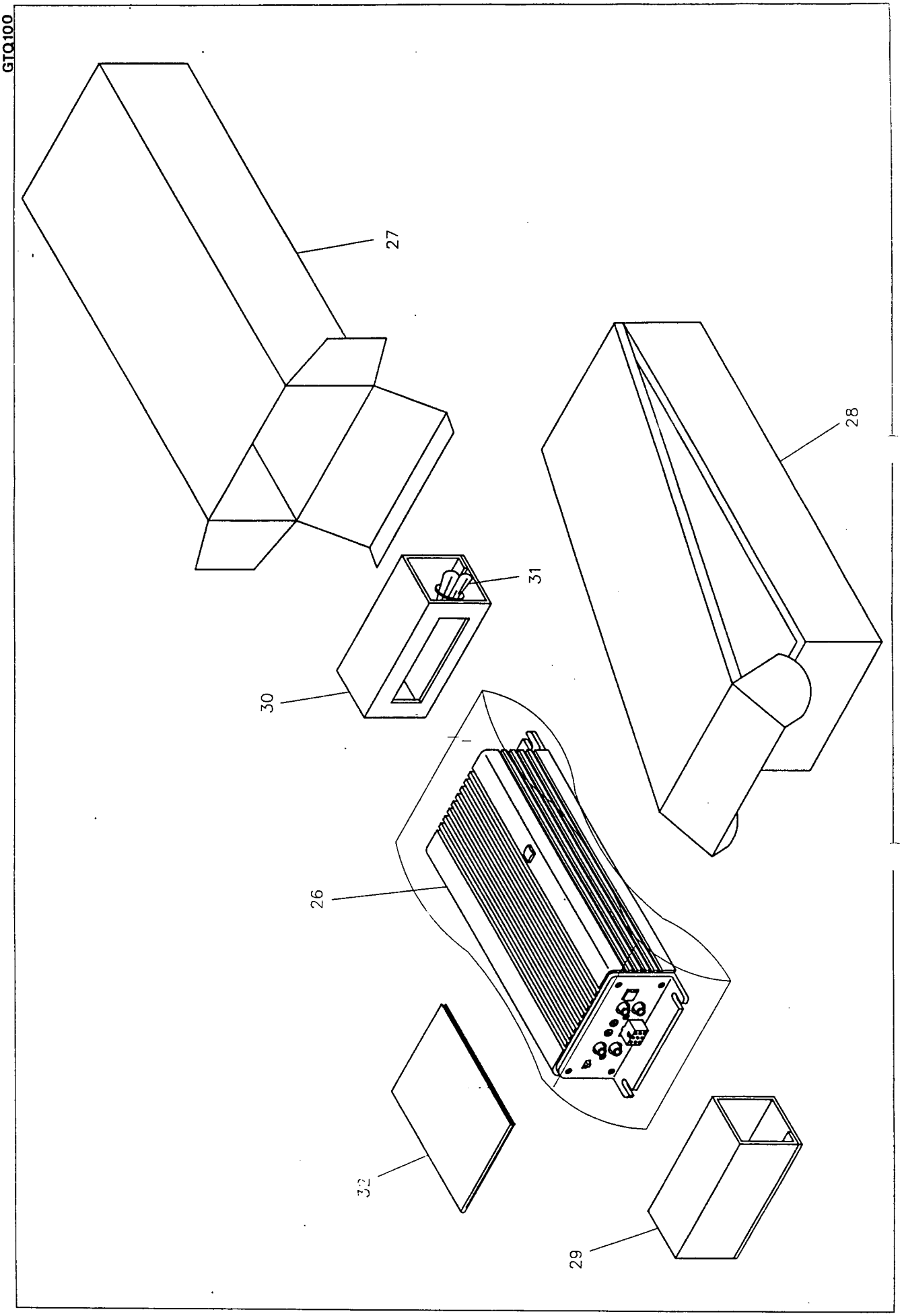
GTQ100 WIRING DIAGRAM



GTQ100 PC BOARD LAYOUT




MODEL: G10100
SCHEMATIC DIAGRAM
29-6-1992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GTQ 100 WIRING DIAGRAM